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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,747	09/18/2003	Kendall E. Keene	OTD-030414 US	5426
27778 7590 01/19/2007 COOPER CAMERON CORPORATION PO BOX 1212 HOUSTON, TX 77251-1212			EXAMINER PATEL, VISHAL A	
			ART UNIT 3673	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		MAIL DATE	DELIVERY MODE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/664,747

Applicant(s)

KEENE ET AL.

Examiner

Vishal Patel

Art Unit

3673

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-8, 12-16 and 19-28 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 5-8, 12-16 and 19-28 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>5/18/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group II in the reply filed on 10/30/06 is acknowledged.

This election is made final.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 9/12/06 has been entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 5 recites the limitation "said opposed ends" in line 9. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Art Unit: 3673

6. Claim 19 and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by Kilmoyer (US. 4,553,759).

Kilmoyer discloses a seal for closing off an annular space between a first and second body and supported by at least one of the first and second bodies (intended use). The seal assembly having an annularly shaded body (72) having an upper (end near 82) and a lower end (end 74) and a longitudinal axis, the body comprises at least one first ring in a first groove (ring 80 in groove 86), the circumference of the first ring differs from the circumference of the first groove (the circumference of ring 80 differs then the circumference of the groove 86) so as to apply a net radial force to the body in a direction substantially perpendicular to the longitudinal axis and the circumference of the first ring is greater than the circumference of the groove (the ring 80 has a circumference that is greater than the circumference of the groove as seen in figure 3).

The body comprises a second ring (78) in a second groove (84) disposed on the opposite of the body from the first ring, the second ring, when the body is installed in the annular gap (intended use), is in an interference fit with the one of the first and second bodies to an extent of at least a portion of the cross-sectional diameter of the second ring. The first and second rings are made of virgin PTFE which has Durometer hardness of about 56-85 (this material has a Durometer hardness of 40-65, evidence of this is showed by Czernik et al, US. 3,924,907).

The circumference of the first ring at location nearest the first circumference of the first groove differs from the first circumference of the first groove (the circumference of the first ring is different than the circumference of the groove circumference).

The first ring is softer than the body.

Art Unit: 3673

The limitation that the first circumference of the first ring at a location nearest the first circumference of the first groove differs before mounting is not persuasive because this is considered to be a method limitation. Furthermore the first ring 46 has a circumference that is contracted to an amount so as to be placed in a groove 56.

The seal of Kilmoyer is capable of being placed in a gap between two components and that the gap is smaller than the seal, so as to contract the seal.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kilmoyer.

Kilmoyer discloses the claimed invention except that the first ring circumference is 8-15% different from the first groove in which it is installed. Discovering an optimum range of a result effective variable involves only routine skill in the art. In re Kulling, 895 F.2d 1147, 14 USPQ 2d 1056. Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first ring circumference is 8-15% different than the circumference of the first groove in which it is installed as a matter of design choice.

Regarding to the limitations "when the body is installed in the annular gap, is in an interference fit with the one of the first and second bodies to an extend of at least about 20% of

Art Unit: 3673

the cross-sectional diameter of the second ring” is considered to be intended use and the second ring of Kilmoyer is capable of being in an interference fit of 20% with respect with another body.

9. Claim 5-8, 12-16 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEver et al (US. 4,496,162) in view of Vanderford et al (US. 4,381,114) and further in view of Kilmoyer (Us. 4,553,759).

McEver discloses a seal for closing off an annular space between first and second bodies (inner body 18 and outer body having surface 12) and supported by at least one of the first and second bodies (intended use). The seal assembly comprising an annular shaped body (36) having an upper and a lower end (upper and lower end of 36 having backup rings 50 and 52), at least one backup ring (backup rings 50 and 52) mounted on the ends of the annular shaped body and having a relaxed dimension greater than the annular space (the body and the backup ring have a greater dimension than an annular space because backup rings 50, 52 and body 36 contact the bodies) between the first and second bodies so that opposed ends on the backup ring must be compressed to be inserted in the annular gap (the body and the backup rings are compressed). The backup rings having ends that extend toward each other (body backup rings 50 and 52 have ends 56a and 56b that extend toward each other). The body urges the ends of the backup rings away from each other (this is the case since the body 36 is between ends 56a and 56b). The backup rings are placed between the bodies and the backup rings apply a force to the bodies. The annular shaped body has an interference fit with the bodies. The annular shaped body having an inner circumferential surface that contacts a first body and an outer circumferential surface that contacts a second body (inner body 18 and outer body having surface 12).

The limitation that the backing ring must be compressed to be inserted in the annular gap is considered to be method limitation and is given little patentable weight. Furthermore the seal of McEver is capable of being inserted after the two members 18 and 22 are brought sufficiently together.

McEver discloses the invention substantially as claimed above but fails to disclose that the backup ring further comprising a bend between the ends of the backup ring. Vanderford discloses a seal body having ends and the ends having backup rings with ends (figure 4, seal 64' having ends with backup rings having ends 86', 84', 90' and 92') and a seal body having ends (fig. 5, 100), the ends of the seal having backup rings having ends (fig. 5, backup rings having ends 110 and 107) and a bend (112) between the ends of the backup rings (fig. 5, 112 is between the ends of the backup rings). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the backup rings of McEver to have a bend between the ends of the backup rings as taught by Vanderford, to provide additional strength (column 3, lines 67-68 of Vanderford).

Regarding the limitations that the bend between the opposed ends to store a force created by insertion of the backup ring into the annular space and apply the force on the opposed ends against the first and second bodies is given little patentable weight, since this limitations are considered to be method limitation. Furthermore McEver teaches the structural limitations of having a bend between opposed ends of a backup ring.

McEver and Vanderford disclose the invention substantially as claimed above but fail to disclose that the body comprises at least one first ring in a first groove, the groove having a bottom and a circumference at the bottom, the circumference of the first ring at a location nearest

Art Unit: 3673

the first circumference of the first groove differs before mounting from the first circumference of the first groove, a second ring in a second groove and the circumference of the second ring is shorter than the circumference of the second groove. Kilmoier discloses a seal ring having a first groove (56), the first groove having a ring (48), a second groove (58) having a second ring (46), the circumference (outer circumference of the first ring 48) of the first ring exceeds the circumference of the first groove (the circumference of a bottom of the first groove and furthermore the first ring projects beyond the groove depth), the circumference of the second ring (inner circumference of the second ring) is shorter than the circumference of the second groove (the circumference of a bottom of the second groove and furthermore the ring projects beyond the groove depth), the rings are made of virgin PTFE (this material has a Durometer hardness of 40-65, evidence of this is showed by Czernik et al, US. 3,924,907), the first ring contacts a first body (22) and the second ring contacts a second body (26). The circumference of the first ring at location nearest the first circumference of the first groove differs from the first circumference of the first groove (the circumference of the first ring is different that the circumference of the groove circumference). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the annular body of McEver and Vanderford to have first and second grooves to have first and a second rings, the circumference of the first ring exceeds the circumference of the first groove, the circumference of the second ring is shorter than the circumference of the second groove, the rings are made of virgin PTFE and the rings contact the bodies as taught by Kilmoier to provide a seal at low temperatures (column 3, lines 15-16 of Kilmoier).

The limitation that the first circumference of the first ring at a location nearest the first circumference of the first groove differs before mounting is not persuasive because this is considered to be a method limitation. Furthermore Kilmoyer teaches that the first ring 46 has a circumference that is contracted to an amount so as to be placed in a groove 56 (see figure 2).

Regarding claims 6 and 16: The first ring when placed in contact with one of the first and second bodies deforms in a manner so as to force the ends of the backup ring away from each other, the body has a longitudinal axis and the deformation results in the first deforming into an undulating wave pattern in an axial direction parallel to the longitudinal axis (this limitation is considered to be intended use and/or method limitations which is given little patentable weight in an apparatus claim, when something is placed into something else to cause a reaction).

Regarding claims 12-13: The first ring is the second ring of Kilmoyer because the first ring has a shorter circumference than the groove and contacts with one of the bodies that has larger dimension. Furthermore when the body is installed in the annular gap, is in an interference fit with the one of the first and second bodies to an extent of at least about 20% of the cross-sectional diameter of the first ring (this is considered to be intended use and further more see paragraph that rejects claim 14).

Regarding claim 16: This is rejected because all the structural limitations is disclosed by McEver, Vanderford and Kilmoyer. The wave pattern in the axial direction is caused by the circumferential dimension of the first ring relative to the circumferential dimension of the first groove, which is taught by Kilmoyer.

Regarding claim 7: McEver, Vanderford and Kilmoyer disclose the claimed invention except that the first ring circumference is 8-15% greater than the circumference of the first

Art Unit: 3673

groove in which it is installed. Discovering an optimum range of a result effective variable involves only routine skill in the art. In re Kulling, 895 F.2d 1147, 14 USPQ 2d 1056. Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the first ring circumference be in the range of 8-15% greater than the circumference of the first groove in which it is installed as a matter of design choice.

Regarding claims 14-15: McEver, Vanderford and Kilmoyer disclose the claimed invention except that the second ring is in an interference fit with one of the bodies to an extend of about 20% of the cross-section diameter of the second ring (meaning that 20% of the diameter is contacting the body). Discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Without the showing of some unexpected result. Since applicant has not shown some unexpected result the inclusion of this limitation is considered to be a matter of choice in design. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the second ring in an interference fit with one of the bodies to an extend of about 20% of the cross-section diameter of the second ring as a matter of design choice. Furthermore this is considered to be a method limitations and given little patentable weight in an apparatus claim.

10. Claims 19-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEver in view of Kilmoyer.

McEver discloses a seal assembly for closing off an annular space between first and second bodies (inner body 18 and outer body having surface 12) and supported by at least one of

Art Unit: 3673

the first and second bodies (intended use). The seal assembly comprising an annular shaped body (36) having an upper and a lower end (upper and lower end of 36 having backup rings 50 and 52), at least one backup ring (backup rings 50 and 52) mounted on the ends of the annular shaped body and having a relaxed dimension greater than the annular space (the body and the backup ring have a greater dimension than an annular space because backup rings 50, 52 and body 36 contact the bodies) between the first and second bodies so that opposed ends on the backup ring must be compressed to be inserted in the annular gap (the body and the backup rings are compressed). The backup rings having ends that extend toward each other (body backup rings 50 and 52 have ends 56a and 56b that loop toward each other). The body urges the ends of the backup rings away from each other (this is the case since the body 36 is between ends 56a and 56b). The backup rings are placed between the bodies and the backup rings apply a force to the bodies. The annular shaped body has an interference fit with the bodies. The annular shaped body having an inner circumferential surface that contacts a first body and an outer circumferential surface that contacts a second body (inner body 18 and outer body having surface 12).

McEver disclose the invention substantially as claimed above but fail to disclose that the body comprises at least one first ring in a first groove, the first groove having a bottom and a first circumference at the bottom, the circumference of the first ring at a location nearest the first circumference of the first groove differs from mounting from the first circumference of the first groove, a second ring in a second groove and the circumference of the second ring is shorter than the circumference of the second groove. Kilmoyer discloses a seal ring having a first groove (56), the first groove having a ring (48), a second groove (58) having a second ring (46), the

Art Unit: 3673

circumference (outer circumference of the first ring 48) of the first ring exceeds the circumference of the first groove (the circumference of a bottom of the first groove and furthermore the first ring projects beyond the groove depth), the circumference of the second ring (inner circumference of the second ring) is shorter than the circumference of the second groove (the circumference of a bottom of the second groove and furthermore the ring projects beyond the groove depth), the rings are made of virgin PTFE (this material has a Durometer hardness of 40-65, evidence of this is showed by Czernik et al, US. 3,924,907), the first ring contacts a first body (22) and the second ring contacts a second body (26). The circumference of the first ring at location nearest the first circumference of the first groove differs from the first circumference of the first groove (the circumference of the first ring is different that the circumference of the groove circumference). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the annular body of McEver to have first and second grooves to have first and a second rings, the circumference of the first ring exceeds the circumference of the first groove, the circumference of the second ring is shorter than the circumference of the second groove, the rings are made of virgin PTFE and the rings contact the bodies as taught by Kilmoyer to provide a seal at low temperatures (column 3, lines 15-16 of Kilmoyer).

The limitation that the first circumference of the first ring at a location nearest the first circumference of the first groove differs before mounting is not persuasive because this is considered to be a method limitation. Furthermore Kilmoyer teaches that the first ring 46 has a circumference that is contracted to an amount so as to be placed in a groove 56 (see figure 2).

Art Unit: 3673

Regarding to the limitations "when the body is installed in the annular gap, is in an interference fit with the one of the first and second bodies to an extend of at least about 20% of the cross-sectional diameter of the second ring" is considered to be intended use and the seal assembly of McEver et al and Kilmoyer is capable of being in an interference fit of 20% with respect with another body.

11. Claims 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEver and Kilmoyer as applied to claim 22 above, and further in view of Vanderford.

McEver and Kilmoyer disclose the invention substantially as claimed above but fail to disclose that the backup rings further comprising a bend between the ends of the backup rings to store a force. Vanderford discloses a seal body having ends and the ends having backup rings with ends (figure 4, seal 64' having ends with backup rings having ends 86', 84', 90' and 92') and a seal body having ends (fig. 5, 100), the ends of the seal having backup rings having ends (fig. 5, backup rings having ends 110 and 107) and a bend (112) between the ends of the backup rings (fig.5, 112 is between the ends of the backup rings). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the backup rings of McEver to have a bend between the ends of the backup rings as taught by Vanderford, to provide additional strength (column 3, lines 67-68 of Vanderford).

Regarding claims 24-25: These claims are rejected because all the structural limitations are disclosed by McEver, Vanderford and Kilmoyer. The wave pattern in the axial direction is caused by the circumferential dimension of the first ring relative to the circumferential dimension of the groove. The first ring when placed in contact with on of the first and second bodies deforms in a manner so as to force the ends of the backup ring away from each other, the

Art Unit: 3673

body has a longitudinal axis and the deformation results in the first deforming into an undulating wave pattern in an axial direction parallel to the longitudinal axis (intended use, when something is placed into something else to cause a reaction).

12. Claim 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over McEver et al (US. 4,496,162) in view of Vanderford et al (US. 4,381,114) in further view of Taylor (US. 3,869,132) and further in view of Kilmoyer (Us. 4,553,759).

McEver discloses a seal assembly for closing off an annular space between first and second bodies (inner body 18 and outer body having surface 12) and supported by at least one of the first and second bodies (intended use). The seal assembly comprising an annular shaped body (36) having an upper and a lower end (upper and lower end of 36 having backup rings 50 and 52), at least one backup ring (backup rings 50 and 52) mounted on the ends of the annular shaped body and having a relaxed dimension greater than the annular space (the body and the backup ring have a greater dimension than an annular space because backup rings 50, 52 and body 36 contact the bodies) between the first and second bodies so that opposed ends on the backup ring must be compressed to be inserted in the annular gap (the body and the backup rings are compressed). The backup rings having ends that extend toward each other (body backup rings 50 and 52 have ends 56a and 56b that extend toward each other). The body urges the ends of the backup rings away from each other (this is the case since the body 36 is between ends 56a and 56b). The backup rings are placed between the bodies and the backup rings apply a force to the bodies. The annular shaped body has an interference fit with the bodies. The annular shaped body having an inner circumferential surface that contacts a first body and an outer

Art Unit: 3673

circumferential surface that contacts a second body (inner body 18 and outer body having surface 12).

The limitation that the backing ring must be compressed to be inserted in the annular gap is considered to be method limitation and is given little patentable weight. Furthermore the seal of McEver is capable of being inserted after the two members 18 and 22 are brought sufficiently together.

McEver discloses the invention substantially as claimed above but fails to disclose that the backup ring further comprising a bend between the ends to store a force. Vanderford discloses a seal body having ends and the ends having backup rings with ends (figure 4, seal 64' having ends with backup rings having ends 86', 84', 90' and 92') and a seal body having ends (fig. 5, 100), the ends of the seal having backup rings having ends (fig. 5, backup rings having ends 110 and 107) and a bend (112) between the ends of the backup rings (fig.5, 112 is between the ends of the backup rings). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the backup rings of McEver to have a bend between the ends of the backup rings as taught by Vanderford, to provide additional strength (column 3, lines 67-68 of Vanderford).

McEver and Vanderford disclose the invention substantially as claimed above but fails to disclose that the ends of the backup ring loop toward each other to create a gripping engagement with the body under residual force upon initial mounting to the body (intended use). Taylor teaches to use an E-shape member having ends that loop towards each other (figure 4) instead of a C or U or V shape ring (figures 2-3 and 5), which is placed on an annular body having an upper and lower end. It would have been obvious to one having ordinary skill in the art at the time the

Art Unit: 3673

invention was made to configure the ends of the backup ring of McEver and Vanderford to have loop ends as taught by Taylor, to provide a more resilient backup ring and lowering the amount of force required to squeeze the backup ring (column 4, lines 1-6 of Taylor).

McEver, Vanderford and Taylor disclose the invention substantially as claimed above but fail to disclose that the body comprises at least one first ring in a first groove, the circumference of the first ring exceeds the circumference of the first groove and the first ring, when placed in contact with one of the first and second bodies, deforms in a manner so as to force the ends of the backup ring away from each other (when a ring is placed in a groove of the body of McEver and Vanderford would cause this because the ring will compress the annular body inwardly and this will cause the annular body to force the ends of the backup rings to move away from each other), a second ring in a second groove and the circumference of the second ring is shorter than the circumference of the second groove. The first ring at a location nearest the first circumference of the first groove differs from the first circumference of the first groove.

Kilmoyer discloses a seal ring having a first groove (56), the first groove having a ring (48), a second groove (58) having a second ring (46), the circumference (outer circumference of the first ring 48) of the first ring exceeds the circumference of the first groove (the circumference of a bottom of the first groove and furthermore the first ring projects beyond the groove depth), the circumference of the second ring (inner circumference of the second ring) is shorter than the circumference of the second groove (the circumference of a bottom of the second groove and furthermore the ring projects beyond the groove depth), the rings are made of virgin PTFE (this material has a Durometer hardness of 40-65, evidence of this is showed by Czernik et al, US. 3,924,907), the first ring contacts a first body (22) and the second ring contacts a second body

Art Unit: 3673

(26). The circumference of the first ring at location nearest the first circumference of the first groove differs from the first circumference of the first groove (the circumference of the first ring is different than the circumference of the groove circumference). It would have been obvious to one having ordinary skill in the art at the time the invention was made to configure the annular body of McEver, Vanderford and Taylor to have first and second grooves to have first and a second rings, the circumference of the first ring exceeds the circumference of the first groove, the circumference of the second ring is shorter than the circumference of the second groove, the rings are made of virgin PTFE and the rings contact the bodies as taught by Kilmoyer to provide a seal at low temperatures (column 3, lines 15-16 of Kilmoyer).

The limitation that the first circumference of the first ring at a location nearest the first circumference of the first groove differs before mounting is not persuasive because this is considered to be a method limitation. Furthermore Kilmoyer teaches that the first ring 46 has a circumference that is contracted to an amount so as to be placed in a groove 56 (see figure 2).

Response to Arguments

13. Applicant's arguments filed 8/10/06 have been fully considered but they are not persuasive.

Applicants' arguments with regards to claims that are canceled are moot.

Applicants' arguments with regards to claims 5-8, 12-15, 20-26 are moot in view of the new rejection above.

Applicants' argument that Kilmoyer fails to disclose that the ring having a different circumference than the circumference of the groove is not persuasive because one in the ordinary skilled in the art is aware of that the ring 78 must be expanded to be placed in the groove 84 and

Art Unit: 3673

the ring 80 must be expanded to be placed in the groove. Furthermore the ring 80 has an circumference near the bottom wall of groove 86 that is larger, since the ring goes over the groove. Similarly the ring 78 has a circumference that is smaller than the bottom of the groove 84, since the groove goes around the ring.

Applicants' argument that Kilmoyer does not teach "the circumference of the first ring at a location nearest the first circumference of the first groove differs from the first circumference of the first groove" is not persuasive because as stated before the reference of Kilmoyer does teach this. The seal ring 46 of Kilmoyer has an outer diameter that corresponds to the bottom surface of groove 56 that is contracted and placed on top of a bottom surface of the groove 56 to provide a contact with the groove bottom surface as seen in figure 2, so the limitation that the first ring at a location nearest the first circumference of the first groove differs before mounting from the first circumference of the groove is taught by Kilmoyer.

Applicants' argument that Kilmoyer cannot be combined with McEver is not persuasive because there is a clear teaching in Kilmoyer why one places grooves in a ring body and sealing members in the grooves to provide seal in low temperature environment.

Furthermore McEver teaches to have a seal ring that is compressed before it is placed in a place having backup rings. The backup ring having a bent between the ends of the backup ring is taught by Vanderford. The loop ends are taught by Taylor. The reference of Kilmoyer teaches to have O-rings to be placed on grooves in the seal ring

Art Unit: 3673


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vishal Patel whose telephone number is 571-272-7060. The examiner can normally be reached on 6:30am to 8:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patricia L. Engle, can be reached on 571-272-6660. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

VP
January 9, 2007


Vishal Patel
Patent Examiner
Tech. Center 3600